

Is danger lurking in coffee and biscuits?

It is just over 200 years since the first amino acid was isolated from its natural source. Purified from asparagus juice in 1806, the substance was given the name asparagine. Now, two centuries later, suspicions are growing that foods containing asparaginase may pose a health risk.

The suspected hazard is not the amino acid itself but a derivative, acrylamide, which is formed during the cooking of produce containing asparagine. Among the more popular foods implicated are fried products such as potato chips and crisps and baked products such as crackers, biscuits and bread. Coffee is also under suspicion.

An article published in the February issue of *Chemistry World* draws attention to the problem. Acrylamide was suspected five years ago of being a carcinogen and was given high publicity. Suspicion about the substance was first expressed in Sweden, where workers using an acrylamide sealant in a damp and poorly ventilated tunnel showed high blood concentrations. Many other workers have

also demonstrated exposure to the compound.

Animal feeding studies revealed that acrylamide increases the incidence of some cancers, including testicular mesotheliomas and adenocarcinomas of mammary glands and uterus. It was also found to be neurotoxic. However, subsequent investigations at Harvard University have shown no association between dietary acrylamide and cancer risk in humans. With mean daily consumption of 0.5µg per kg by adults, it is supposed that individuals effectively detoxify such doses. The verdict therefore still hangs in the balance.

The worry is that acrylamide derived from asparagine occurs in almost every heated item of diet. The food industry has made efforts to reduce its occurrence where this is feasible. Reducing cooking times, lowering pH and using sodium bicarbonate in place of ammonium bicarbonate as a raising agent are among the methods used to reduce risk.

One possible means of limiting the production of acrylamide within foodstuffs is

to use the enzyme asparaginase to break down the asparagine. Adding asparaginase does not affect the food's flavour, but the technique can only be used with certain products that start as batters or doughs, and is unsuitable for wholegrain foods such as breads. It also requires careful control of cooking temperatures, since excessive heat will deactivate the enzyme.

Pharmacists should perhaps not be surprised to learn that asparaginase may be of use against a suspected carcinogen since, in its guise as crisantaspase, it already has a place as an antineoplastic agent in the treatment of acute lymphoblastic leukaemia.

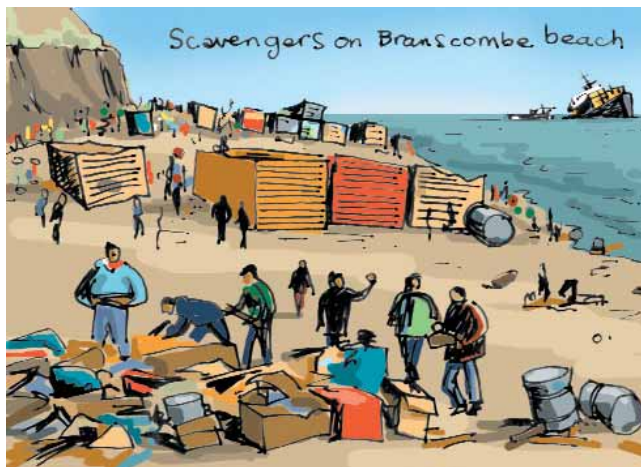
Crop cultivation processes may also be an important factor where dietary acrylamide is concerned. It has been found that wheat grown in sulphur-poor soil contains particularly high levels of asparagine and therefore produces more acrylamide during the cooking process. Recent changes in farming practice have added to the problem by depleting natural sulphate in soils.

Going back to our every-man-for-himself roots

Our civilisation sits upon a surprisingly insecure basis, once we start to examine it. Evidence has recently emerged from the Devon village of Branscombe. It is normally a peaceful place, but within a few hours of the stranding of the cargo vessel *Napoli* on the beach there, scavengers hoping for spoil invaded the whole district. Hundreds of vehicles travelled from across Britain, blocking roads and alarming local inhabitants.

Unfortunately, the roads running down into Branscombe are wide enough for only one vehicle at a time. Legitimate transport, including emergency services, was arrested, and it was many hours before the police managed to work out a plan to deal with the invasion. Because the removal of the many beached containers is expected to take at least five months, the outlook is still grim for those who have regular need for local transport.

Ten years ago, in the spring of 1997, I was in the Isles of Scilly when another container ship, the *Cita*, was wrecked off the coast there. There was local excitement and islanders were out in their hundreds searching the bays for all manner of wreckage. There were computers, typewriters and even sewing machines but the bulk of the loot was children's garments. Thanks to local initiative, much was col-



lected, washed and donated to charities, but there was also a notable improvement in the attire of local children. Moreover, it was amazing to see how many smart cottage doors showed new hardwood panels, while a surprising number of local cars boasted brand new tyres. However, in the outlying reefs there were great piles of printed supermarket bags to be negotiated.

I was reminded of the past of our West Country coastline, where wrecks were not long ago eagerly welcomed and even arranged — when it was part of the game to see that there were no survivors to tell the tale to the authorities. It was the companion picture to smuggling. I suspect that instincts in many people are not much advanced since the days of our every-man-for-himself culture.

Mobile menace needs sensible precautions

There has long been argument over the desirability or otherwise of allowing mobile telephones to be used in special situations. Their use has been restricted in petrol stations, in aircraft and in some areas of hospitals. These constraints have been based on considerations of public safety but good reasons for a restriction have not always been advanced.

These widely used devices were the subject of an editorial in the 14 October 2006 issue of the *BMJ*. Although patients, visitors and staff often wander about hospitals with their mobile telephones switched on, safety considerations should remain paramount, the article says, and some limitations must be placed on devices that might interfere with sensitive electronic equipment. At a distance of one metre or less a mobile telephone might upset medical equipment or trigger confusing alarms. Sensible precautions are called for.

In addition, mobile telephone ringing tones may be a nuisance, and patients who receive a call in the middle of a consultation may cause professional irritation. Camera telephones should not be allowed in hospitals since they could undermine the right to privacy.

It is now accepted that a total ban on mobile telephones in hospitals is impossible to enforce and is unnecessary. The devices need only be switched off in critical care areas such as intensive care units. And it must not be forgotten that doctors, pharmacists and other health professionals may themselves benefit from access to mobile telephones rather than electronic pagers.